

REMARKS/ARGUMENTS

In view of the foregoing amendments and the following remarks, the applicants respectfully submit that the pending claims are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicants will now address each of the issues raised in the outstanding Office Action. First, however, the undersigned would like to thank Examiner Mahmoudi for courtesies extended during a telephone interview on February 10, 2005 (referred to below as "the telephone interview"). During the telephone interview, the Cappi patent and the Examiner's reading of the claims onto the Cappi patent were discussed. The Examiner suggested specifying that the mapping translates each of a plurality of numbers to its corresponding letters, such as is the case with a telephone keypad, in order to help distinguish the claimed invention over the cited art.

Rejections under 35 U.S.C. § 103

Claims 1-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0038308 ("the Cappi publication") in view of U.S.

Patent No. 6,256,630 ("the Gilai patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the foregoing amendments and following remarks.

First, at least some of the claims are allowable over the cited art at least because they recite an act of providing at least two sequences of less ambiguous information (mapped from a sequence of ambiguous information components), effectively joined by a logical "OR" operation request, as an input to a search engine. Second, one claim is allowable over the cited art at least because it recites an act of determining a subset of (translated) sequences of less ambiguous information components by comparing the (translated) sequences of less ambiguous information components with terms used in past search queries stored in a search query log. Third, at least some of the claims are allowable over the cited art at least because they recite acts of (i) using mapping information to determine, from a sequence of key press information components, other information components by converting each key press information component to each of the other information components that correspond to the key press component, and (ii) providing one or more of a received sequence and other sequences as a search query input to a search engine. Fourth, at least some of the claims are allowable over the cited art at least because they recite acts of receiving at least two number words constituting a number phrase, translating each number word into one or more letter words, based on mapping information, to generate a plurality of letter phrases, each of the letter phrases corresponding to the number phrase, and forming a search

query (which includes at least one of the letter phrases) to a search engine. Finally, one of the claims is allowable over the cited art at least because it recites an act of reordering the obtained search results using the language of the user. Each of these features, as well as the claims including each feature, is discussed below. First however, the cited references are discussed.

The Cappi Publication

The Cappi publication addresses the problem of integrating and searching data across two or more database systems, particularly if each has a different database management system. (See, e.g., paragraphs 0003-0007.) The solution proposed by the Cappi publication requires two stages - an integration stage and a retrieval stage. (See, e.g., paragraph 0039.) Each of these stages is introduced below.

Briefly stated, the integration stage builds various indexes (called "dictionaries") that are used to relate different data elements (DEs) in different databases. The parts of the system and the content of the dictionaries are described generally in paragraphs 0034-0086. The integration stage is described generally in paragraphs 0087-0126. The integration stage accounts for two potential types of ambiguity. In a first type of ambiguity, DEs with the same name can mean different things. (See, e.g., paragraph 0100.) A simple example is the word "bill." Bill can mean a person's given name, or it can mean an invoice. In a second type of ambiguity, DEs with different names can mean the same thing. (See, e.g., paragraph 0101.) A simple example is

"sales" and "revenues." **Note that these ambiguities do not arise out of a limitation of a user input device. Rather, these ambiguities arise from the fact that disparate databases may use different words or labels to mean the same thing, or may use the same word or label to mean different things. That is, these ambiguities arise from limitations of languages and vocabularies.**

The retrieval stage is generally described in paragraphs 0127-0148. A query is entered and is used to determine whether or not there are any matching DEs in the DE dictionary (DED). If so, mapped database names (which identify the databases that the matched data element can be found in) are retrieved. (See, e.g., paragraph 0142.) Note that various data structures populated during the integration stage permit one term to be used to search similar DEs having different names in various disparate databases. **However, the different names do not use more or less ambiguous information components.** If the query doesn't match a DE in the DED, it is determined whether or not there are any matching ambiguous DEs (ADEs) in the ADE dictionary (ADED). (See, e.g., paragraph 0143.) If not, any error message is returned. If, however, there is an matching ADE in the ADED, the mapped database names are retrieved. (See, e.g., paragraph 0144.) The query is then used to search the identified databases. (See, e.g., paragraphs 0145-0147.)

As can be appreciated from the foregoing, the Cappi publication is concerned with ambiguities arising from the fact that different databases may use different words or labels to mean the same thing, or the same word or label to mean different things. It builds data

structures during the integration stage to account for these ambiguities. **Importantly, the Cappi publication does not address a user query consisting of a sequence of ambiguous information components. That is, although terms may be ambiguous, their constituent letters (i.e., their "information components") are not.** Thus, the Cappi publication addresses a very different problem than that addressed by the present invention (and a very different problem than that addressed by the Gilai patent, discussed below).

The Gilai Patent

The Gilai patent, like the present invention, can handle an ambiguous user input or query, but does so in a different way than the present invention. The Gilai patent can accept an ambiguous input such as keystrokes, speech, oral characters and oral phonemes. A spell guess operation 30 is used to generate a set of one or more possible strings and associated probabilities using the ambiguous input. However, the spell guess operation 30 does not use mapping information that maps ambiguous information components to less ambiguous information components. Instead, it uses a recursive string lengthening processes to generate strings, using trigrams included in the string and occurrence frequency information of such trigrams. (See, e.g., Figure 2 and column 11, line 54 through column 12, line 64.)

Having introduced the Cappi publication and the Gilai patent, at least some of the patentable features of the present invention are addressed below.

Claims 1-13, 15, and 30-35

Independent claims 1 and 30-32 are allowable over the Cappi publication and the Gilai patent because these references, either taken alone, or in combination, do not teach an act of providing at least two sequences of less ambiguous information (mapped from a sequence of ambiguous information components), effectively joined by a logical "OR" request, as an input to a search engine. As discussed in the "overview" of the present application, this feature is advantageous in that it allows the search engine to be used to help limit search results to those in which the user is likely interested, even when the user inputs a query including ambiguous information components. (See, e.g., page 4, lines 1-8.)

The Examiner contends that the Cappi publication teaches this feature, citing paragraph 0034 which discusses "logical integration." (See, e.g., Paper No. 20041015, page 6.) The applicants respectfully disagree. The logical integration discussed in paragraph 0034 of the Cappi publication concerns logically integrating data elements across multiple databases onto one logical data dictionary. This logical integration is not accomplished by providing at least two sequences of less ambiguous information (mapped from a sequence of ambiguous information components), effectively joined by a logical "OR" request, as an input to a search engine, as claimed. Indeed, recall that the Cappi publication performs the integration stage before the retrieval stage. (See, e.g., paragraph 0039 of the Cappi publication.) Thus, the logical integration referred to in the Cappi publication is not accomplished by acts after, or otherwise responsive to, the receipt of a search query.

The Gilai patent does not compensate for this deficiency of the Cappi publication. Accordingly, independent claims 1 and 30-32 are not rendered obvious by the Cappi publication and the Gilai patent for at least the foregoing reason. Since claims 2-13, 15 and 33-35 depend, either directly or indirectly, from claim 1, these claims are similarly not rendered obvious by these references.

Claim 14

Claim 14 is allowable over the Cappi publication and the Gilai patent because these references, either taken alone, or in combination, do not teach an act of determining a subset of (translated) sequences of less ambiguous information components by comparing the (translated) sequences of less ambiguous information components with terms used in past search queries stored in a search query log. As described in the present application, this advantageously permits generated equivalents to be limited. (See, e.g., page 8, lines 10-19.)

The Examiner contends that the Gilai patent teaches this feature, citing column 20, lines 64-67 of the Gilai patent. (See Paper No. 20041015, page 6.) The applicants respectfully disagree. The cited section of the Gilai patent concerns a session log. First, a session log is not necessarily a log of previous search queries as claimed. Second, and more importantly, the Gilai patent says nothing about using information in the session log to determine a subset of (e.g., to narrow) (translated) sequences of less ambiguous information. Accordingly, independent claim 14 is not rendered obvious

by the Cappi publication and the Gilai patent for at least this reason.

Claims 16-20

Independent claim 16 is allowable over the Cappi publication and the Gilai patent because these references, either taken alone, or in combination, do not teach acts of (i) using mapping information to determine, from a sequence of key press information components, other information components by converting each key press information component to each of the other information components that correspond to the key press component, and (ii) providing one or more of a received sequence and other sequences as a search query input to a search engine. During the telephone interview, the Examiner indicated that a mapping that translates each of a plurality of numbers to its corresponding letters, such as with a telephone keypad, would likely distinguish the claimed invention over the cited art. Claim 16 has been amended to more clearly recite this feature in accordance with the Examiner's helpful suggestion. Dependent claims 17-20 further define the invention. Therefore, the applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Claims 26-28, 36 and 37

Independent claim 26 is allowable over the Cappi publication and the Gilai patent because these references, either taken alone, or in combination, do not teach acts of receiving at least two number words constituting a number phrase, translating each number word into one or more letter words based on mapping to

generate a plurality of letter phrases, each of the letter phrases corresponding to the number phrase, and forming a search query (which includes at least one of the letter phrases) to a search engine. As described in the present application, this can help to limit search results. (See, e.g., page 9, lines 14-27.)

Thus, claim 26 is not rendered obvious by the Cappi publication and the Gilai patent for at least the foregoing reason. Since each of claims 27, 28, 36 and 37 depends from claim 26, these claims are similarly not rendered obvious by these references.

Further, new claims 36 and 37 recite how phrases can be used to order and filter, respectively, search results. These claims are supported, for example, by page 10, lines 12-18 of the present application.

Claim 38

Finally, new independent claim 38 is allowable over the Cappi publication and the Gilai patent because these references, either taken alone, or in combination, do not teach an act of reordering the obtained search results using the language of the user. This feature is supported, for example, by page 9, lines 7-9 of the present application.

There is No Suggestion to Modify the References as Proposed.

None the claims are rendered obvious by the Cappi publication and the Gilai patent because there is no suggestion to modify and combine the references as proposed by the Examiner. The Examiner concedes that the Cappi publication does not teach receiving a sequence of

ambiguous information components from a user. To compensate for this admitted deficiency of the Cappi publication, the Examiner relies on the Gilai patent. Specifically, the Examiner contends that the Gilai patent teaches receiving a sequence of ambiguous information components from a user and concludes that it would have been obvious to provide this in the Cappi publication because receiving a sequence of ambiguous information components from a user would enable the user to enter ad-hoc and ambiguous, and possibly erroneous information and still receive best matching results. (See, e.g., Paper No. 4, pages 4 and 5.)

However, the ambiguities discussed in the Cappi publication are different types of ambiguities, and are therefore handled in a very different way. The Cappi publication concerns ambiguities due to limitations of vocabularies and languages, whereas the Gilai patent concerns ambiguities due to limitations of a user input device.

More specifically, in the Cappi publication, if a query data element (QDE) entered does not match any DEs in the DED, the ADEs of the ADED are checked. (See, e.g., Figure 18.) Both the DEs and the ADEs correspond to terms. As discussed above, terms may be ambiguous in that the same term can have different meanings, or different terms can have the same meaning, but such ambiguities (which are due to limits of languages and vocabularies) have nothing to do with ambiguous information components (which are due to limits of a user input device). The Cappi publication creates various data structures and relationships between these data structures to handle potential ambiguities in a query

data element. The query data element need not be changed. On the other hand, the Gilai patent generates alternative queries (e.g., KATHERINE, CATHERINE, CATHYRINE, KATHERYN, KATEHRINE, KATHRYN, CATHRYN) from an ambiguous query (e.g., 228437463) without altering database related structures (e.g., 70 and 72 of Figure 1).

Further, even assuming, arguendo, that one skilled in the art would have been motivated to combine these references, such a skilled artisan wouldn't replace the vocabulary ambiguity handling techniques of the Cappi publication with the techniques of the Gilai patent, which address ambiguities arising from limitations of user input devices. In view of the foregoing, one skilled in the art would not have been motivated to combine the Cappi publication and Gilai patent as proposed by the Examiner. Accordingly, the claims are not rendered obvious by these references for at least this additional reason.

Further, with regard to the dependent claims, the Examiner further modifies the Cappi publication using the Gilai patent without stating why he believes that such further modifications would have been obvious to one of ordinary skill in the art. The applicants respectfully note that suggestions are used to support combining reference teachings, not the references in their entirety. That is, a purported suggestion to combine one teaching from the Gilai patent with the system of the Cappi patent does not support combining any and all teachings of the Gilai patent with the system of the Cappi patent. Accordingly, if the Examiner maintains any such grounds of rejections, the applicants respectfully

submit that he should provide a suggestion in the art for each and every modification proposed. The fact that the references may be from the same technical field (e.g., information retrieval) is insufficient to support the combination.

New claims


New claims 36 and 37 further distinguish the invention over the cited references for the reasons discussed above. New claims 36 and 37 are supported, for example, by page 10, lines 12-18 of the present application. New independent claim 38 is supported, for example, by page 9, lines 7-9 of the present application.

Conclusion

In view of the foregoing amendments and remarks, the applicants respectfully submit that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Respectfully submitted,

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John C. Pokotylo, Attorney
Reg. No. 36,242
Tel.: (732) 542-9070

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John C. Pokotylo

36,242
Reg. No.